

CHAPTER V: MANIPULATIVE AND BODY-BASED THERAPIES: CHIROPRACTIC AND SPINAL MANIPULATION

Forms of Care in Chiropractic

Now let me get to something that's a little more interesting to me and that is the actual procedure of spinal manipulation, spinal mobilization. Here we have a cross bilateral, a psoform contact setup for an adjustment to the thoracic spine. But under this doctor's hands on the patients back, you'll see this little pad here. This pad is a pressure transducer. It can measure the biomechanical forces delivered by the hands as they go into the back here. This is one very interesting piece of technology that we're utilizing right now to make biomechanical measurements of chiropractic adjustments. This says here, at the bottom, "Before performing any new manipulation on humans, chiropractic scientists carefully test the procedure in a laboratory setting." This is actually not quite as funny as you may think, but it's really hard to get those little mice to lie still, let me tell you.

But research is really not just about doing this kind of research. When people talk about research, that's what people tend to think. But it's really much broader and actually a lot more complicated than that. The history of spinal manipulation, by the way, is not chiropractic at all. There's a big difference. D.D. Palmer coined chiropractic and he professionalized the practice of manipulation in the U.S. But the manipulation itself goes way, way back in time, at least as far back as we can tell from Galen and Hypocrites. It's always been a part of orthopedic medical practice as well, although often underground or practiced by bone setters. It has been a component of most traditional medical systems and cultures and still is throughout the world, in fact. So, chiropractors really cannot claim to own spinal manipulation in a historical sense, maybe just in a professional sense at this point.

But what it is, is it's the manual application of force to body tissues, especially structures of the spine. That force may vary in terms of its amplitude, its velocity, its direction, its duration, and its frequency. All of those terms can be measured in one way or another. It's what we call a chiropractic adjustment, and chiropractors, by the way, like to use the

word adjustment to talk about spinal manipulation, because we think the word sounds nicer. I mean would you rather be adjusted or manipulated, after all. So, we like the word adjustment, so I will probably use both words rather interchangeably here.

There's another form of this procedure though that we call mobilization. This is characterized by a low-velocity, variable-amplitude maneuver. As I said before, both of these forms—the umbrella term might be manipulation—of care can be distinguished biomechanically. I'm going to show you that in a second. They are practiced by a number of professions, including physical therapists, medical physicians, acupuncturists, some massage therapists, naturopaths, as well as chiropractors. Of course, I also have to mention the doctors of osteopathy.

Here's a picture. This is actually B.J. Palmer, the second Palmer, delivering an adjustment to the thoracic spine of this patient. This is a film, which we believe dates from probably the late 1920s or early 1930s. He's palpating now for a spot on the spine and he's going to deliver a high velocity. You want to see that again? That was pretty quick, wasn't it? Dr Palmer, we think may have doctored his film to make it look faster than he really was. But that's a form of an adjustment, a high-velocity, low-amplitude application to the very short levers of the spine, the spinous processes, delivering a very short, sharp impulse in order to move the joint. When we do a typical force time profile, it looks like this. Where the amount of force is here in newtons, on the left axis here, and this is the time going across here. You can see that there's an application of a preload, a pause and then the thrust that lasts about 500 milliseconds or so, yielding about 350 newtons. By the way, there are about 4.5 newtons to a pound, so that gives you some idea of the nonforce that's applied in this particular case. Short and sharp and very controlled is the way it goes.

Here's another case, right here. This is a typical side posture lumbar adjustment, done in our clinic just a few days ago. Here the contact is on the lumbar spine and in the thrust right there. This is a very common procedure. Many of you may have even experienced this procedure. Here's one in the neck, right here. Again, a very specific holding on one

joint of the neck and then a very quick little movement. You could barely see it, I know, but that's really typical for a cervical adjustment and a happy patient, too. She's smiling as you noticed.

Then we have another form of care. The adjustments are the short, high-velocity, low-amplitude sorts of application. Then there's the mobilization, which has an oscillating force—a softer sort of approach, up and down, to try to move the joint a number of times to its range of motion. This is distinguished, as you can see, by a very different force time profile. That sort of thing looks like this right here. This is done with a modified flexion/distraction table. The contact is right here with the hand on a specific part of the lumbar spine, one of the vertebrae, holding it. So all the joints below it are moved in very specific directions through leveraging that force to the back end of the table. Very much slower, much more controlled in some ways and very, very helpful for patients who are in acute and very painful sort of states.

So, those are actually the 2 forms of spinal manipulation, the family of spinal manipulation procedures that we're looking at in our center. There are also the 2 forms of care that have not actually been researched enough to my estimation. When we talk about research study outcomes, we have to actually look at a number of different things. I'm throwing these all up here rather quickly to get them up here. But not only do we have to worry about the biological outcomes of what happens in biomechanical terms, we must also think in neurological terms and other physiologic terms and biochemical terms. All of this type of research is basic science type—sometimes using very expensive laboratory systems, expensive instrumentation, sometimes involving animal models, biochemistry, and expensive biomechanical tools. This is the sort of research that we really need to do to understand if and how the manipulation works. How do we understand it? How does it have its effects for patients?

Essentially, we really don't know how spinal manipulation works. We don't know exactly how massage works and to top it off, we don't really know how acupuncture works either, although some very interesting studies are now going on, funded by

NCCAM, in fact. But there have been quite a lot of patient-oriented studies that have happened on spinal manipulation and most of them have looked at pain and disability, some at general health, some in psychological health, certainly satisfaction, and some with qualitative sorts of outcomes. But no single study can look at all of these, all at the same time—it's too complex. Almost all of the trials I'm going to be talking about have picked 1 or maybe 2 of these things at a time and looked at those alone.

We can also talk about harm. I'm going to talk about the safety of manipulation here, and briefly, in just a second. Then we can talk about economics too. What's the cost effectiveness of the therapies we provide? I'm not going to be talking at all about that tonight. That, first of all, is something I don't even understand very well, not being a health economist. But it's also an enormous topic with a great deal of literature and would require its own lecture actually.